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油气储运

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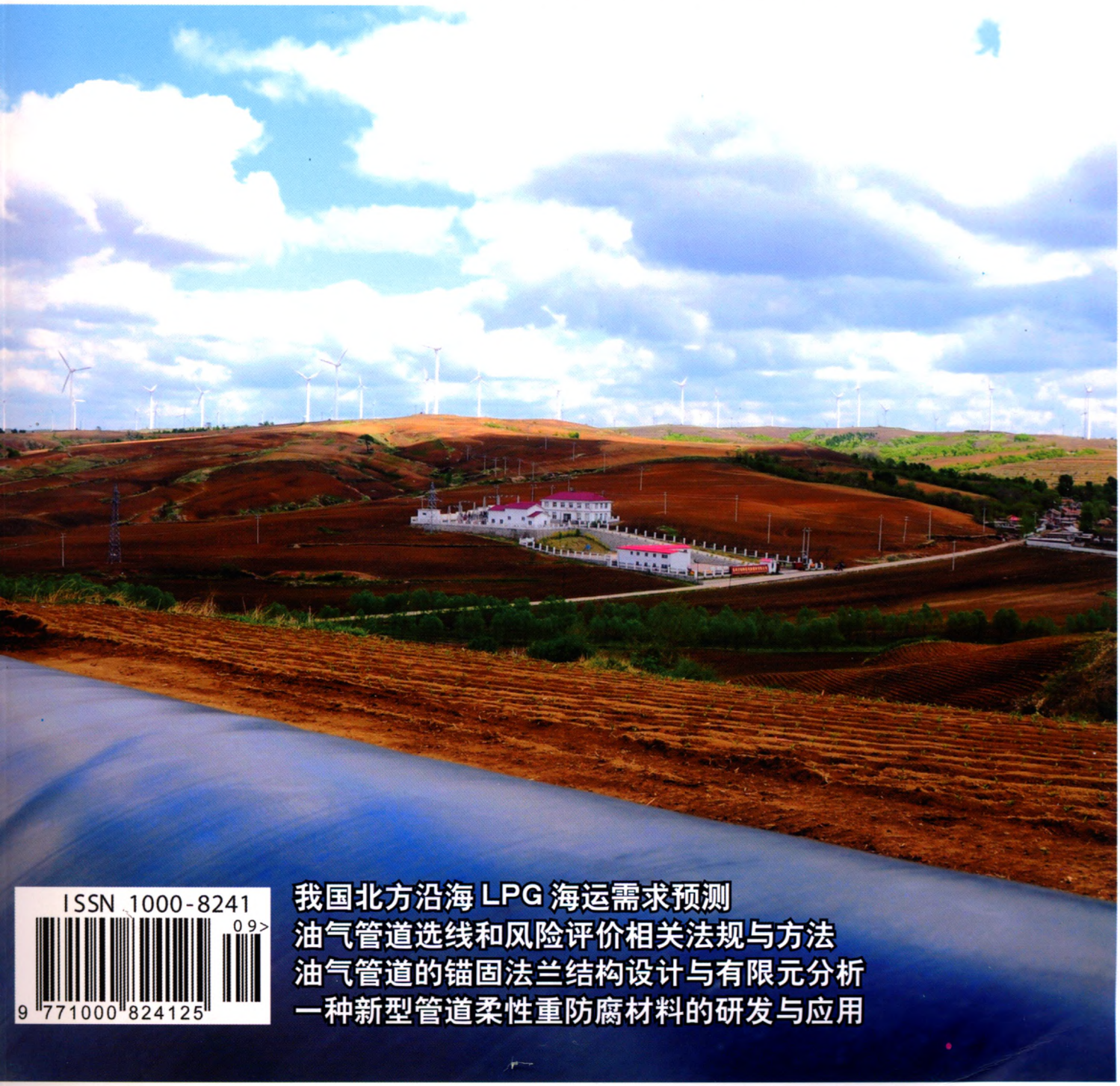

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我国北方沿海 LPG 海运需求预测
油气管道选线和风险评价相关法规与方法
油气管道的锚固法兰结构设计与有限元分析
一种新型管道柔性重防腐材料的研发与应用

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641 油气回收技术的研究进展与研究重点

黄维秋，王丹莉，李峰，等

集成冷凝法和吸附法油气回收工艺的耦合新技术，充分利用两种技术优势，实现了油气回收率、设备投资、运行能耗、设备规模等技术经济综合指标的优化

647 我国北方沿海 LPG 海运需求预测

王成武，唐丽敏，阎英美，等

建立的 3 层神经网络，其输入变量为 3 个，输出变量为 1 个，隐层节点数为 19，传递函数分别选用 S 型对数函数 logsig、S 型正切函数 tansig

652 综合评价方法在油气储运工程中的应用现状

余冷媚，吴灿奇，郑云萍，等

将模糊理论与层次分析法相结合，形成模糊层次分析法，既可以解决判断矩阵一致性检验的问题，也可以减少人为因素造成的权重分配不当和主观判断失误

/ 检测技术 /

657 基于 CFD 模拟的输气管道阀门流噪声仿真

刘翠伟，李玉星，李雪洁，等

在距离阀门 1～5 m 的观测点，音波的声压级随频率增大先增大后减小：在 400 Hz 频率以内，声压级达到最大，之后声压级减小，在 1 000 Hz 处达到最低

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OVERVIEW / DETECTION TECHNOLOGY

/OVERVIEW/

641 Research progress and highlight in light oil recovery technology

Huang Weiqiu, Wang Danli, Li Feng, et al

A new coupling technology integrated with condensation and adsorption of light oil recovery technologies makes full use of advantages of both technologies so as to achieve optimization of the light oil recovery rate, investment in equipment, operation energy consumption, size of equipment and other overall technical and economic indicators.

647 Demand forecast of China's northern coastal LPG shipping

Wang Chengwu, Tang Limin, Yan Yingmei, et al

Established three-layer neural network has 3 input variables, 1 output variable and 19 hidden nodes, and transfer functions are respectively selected to S logarithmic function logsig and S tangent function tansig.

652 Application situation of comprehensive evaluation method in oil & gas storage and transportation engineering

Yu Lengmei, Wu Canqi, Zheng YunPing, et al

Fuzzy analytic hierarchy process generated from the combination of fuzzy theory and analytic hierarchy process can solve the problem of matrix consistency check and reduce weight misallocation and subjective judgement errors caused by human factors.

/DETECTION TECHNOLOGY/

657 CFD analog-based valve flow noise simulation of gas pipeline

Liu Cuiwei, Li Yuxing, Li Xuejie, et al

At the observation point 1 to 5 m from the valve, SPL of the acoustic wave first increases and then decreases with increasing frequency. Within the frequency of 400 Hz or less, the SPL reaches the maximum and then it decreases and reaches the minimum at 1 000 Hz.

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完整性 / 实验研究

/ 完整性 /

663 油气管道选线和风险评价相关法规与方法

张圣柱，吴宗之，张健，等

我国油气长输管道选线主要基于控制安全距离和管道自身安全性的原则，未充分考虑途经地区人员密度、地质情况等因素，建议制定基于风险的选线标准

670 油气管道悬空沉降变形失效评估

于东升，宋汉成

当缺陷在管道的两侧端部时，管道的最大等效应力最小，当缺陷在管道的底部时，管道的最大等效应力最大，且缺陷对悬空管道的等效应力计算影响较大

/ 实验研究 /

674 CFRP 修复城市燃气管道焊缝缺陷的可行性

王雅芬，李荣光，冯少广，等

当加载重量达 7 t、内压为 5 MPa 时，沉降量远超过 440 mm 的屈服形变，但修复后的焊缝缺陷管道仍可承受超过管道设计压力的内压

678 20×10^4 m^3 油罐厚钢板焊接裂纹敏感性试验

韦振光，罗星环，李杰训

对接接头刚性拘束焊接裂纹试验，试验板尺寸为 300 mm×150 mm×44 mm，拘束底板采用厚度为 70 mm 的优质碳素钢板，坡口采用机械切削加工

681 热收缩带热熔胶组分对物性的影响

赵吉诗，冯少广，李睿，等

在湿热加速老化过程中，热熔胶因组分及结构存在差异，其外观在老化过程中发生的变化也会不同

万方数据

INTEGRITY / EXPERIMENT & RESEARCH

/INTEGRITY/

663 Relevant regulations and methods for route selection of oil and gas pipeline and risk assessment
Zhang Shengzhu, Wu Zongzhi, Zhang Jian, et al
Route selection for long-distance oil and gas pipelines in China is based primarily on the principle of controlling safe distance and pipeline safety, without adequate consideration in the population density, geological conditions and other factors of areas along the pipeline. It is recommended that a risk-based route selection standard should be established.

670 Failure assessment on the suspension-settlement deformation of oil and gas pipelines
Yu Dongsheng and Song Hancheng
When defects are at both ends of the pipeline, the equivalent stress reaches the minimum value. When the defects are on the bottom, the equivalent stress comes to the maximum value and the defect applies a larger impact on the calculation of equivalent stress.

/EXPERIMENT & RESEARCH/

674 Feasibility of repairing urban gas pipeline weld defects by CFRP
Wang Yafen, Li Rongguang, Feng Shaoguang, et al
When the loaded weight is at 7 t and internal pressure is at 5 MPa, the settlement is far more than 440 mm of yield deformation, but the repaired weld defect pipeline still can withstand an internal pressure more than the design pressure of the pipeline.

678 Welding crack sensitivity test on thick steel plate of 20×10^4 m^3 oil tank
Wei Zhenguang, Luo Xinghuan, Li Jiexun
Butt joint rigidity restrain welding crack test uses the test board dimensions of 300 mm×150 mm×44 mm, 70 mm thick high quality carbon steel plate as the restraint bottom plate and mechanical cutting groove.

681 Impact of hot melt adhesive components of heat shrinkable sleeve on physical property
Zhao Jishi, Feng Shaoguang, Li Rui, et al
With hot and humid conditions accelerating aging, appearance changes are different in the aging process due to differences in the components and structure of hot melt adhesive.

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设计计算 / 防腐保温 / 安全消防

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685 油气管道的锚固法兰结构设计与有限元分析

赵振兴，赵树炳，朱慧峰，等

锚固法兰应能克服结构给施工带来的困难，并能承受和传递由内压、温差及其他载荷产生的轴向力

689 TGNET 和 SPS 在甬台温输气管道设计中的比较

刘建武，晏伟，梁海宁

当需要中线成果数据导入以及进行动态模拟，特别是需要模拟多种逻辑控制的复杂管网时，SPS 软件明显优于 TGNET 软件

/ 防腐保温 /

692 一种新型管道柔性重防腐材料的研发与应用

袁春，王颖，贾世民，等

柔性防腐材料开挖检测后的漏点、对钢和聚乙烯（PE）的剥离强度均符合 BS EN 12068、ISO 21809-3 和 DIN 30672 技术要求

695 油气管道腐蚀挂片悬挂装置的研制与应用

史涛，梁爱国，李甫，等

主体填料密封系统采用锥形丝扣式机械密封，与闸板相结合，可实现管道内部介质与外部环境的安全隔离

/ 安全消防 /

697 层次灰色评估法在油库火灾危险评估中的应用

周毅，赵晓刚

假设将各灰类等级按照“灰水平”进行赋值，则可得各评价灰类等级化向量 $U=(u_1, u_2, \cdots u_e)$，从而求出综合评价值 $V=\sigma \cdot U^T$

701 南帕斯凝析油卸船的安全措施

秦海洋，刘铁川，黄春芳

将南帕斯凝析油安排在中间卸货，以防止卸船过程中出现舱内正压而导致有毒气体外漏

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DESIGN & CALCULATION / CORROSION CONTROL & INSULATION / SAFETY & FIRE CONTROL

/DESIGN & CALCULATION/

685 Structural design and finite element analysis of anchoring flange for oil and gas pipelines

Zhao Zhenxing, Zhao Shubing, Zhu Huifeng, et al

The anchoring flange shall be able to overcome the construction difficulties caused by the structure and withstand and pass the axial force generated by internal pressure, temperature difference and other loads.

689 Comparison of TGNET and SPS in the design of YongTaiWen Gas Pipeline

Liu Jianwu, Yan Wei, Liang Haining

When the import of midline results data and dynamic simulation are required, especially when it is required to simulate complex pipe network subject to multiple logic controls, SPS software will be significantly better than TGNET software.

/CORROSION CONTROL & INSULATION/

692 Development and application of new flexible heavy anticorrosive material of pipeline

Yuan Chun, Wang Ying, Jia Shimin, et al

Leak points and peel strength on steel and polyethylene (PE) of flexible anti-corrosion material after the excavation test are in line with the technical requirements specified in BS EN 12068, ISO 21809-3 and DIN 30672.

695 Development and application of corrosion coupon suspension device for oil and gas pipelines

Shi Tao, Liang Aiguo, Li Fu, et al

Main packing seal system uses conical threaded mechanical seal and is integrated with the gate to achieve safe isolation between internal pipeline medium and external environment.

/SAFETY & FIRE CONTROL/

697 Application of hierarchy gray assessment method in fire risk assessment of oil tankfarm

Zhou Yi and Zhao Xiaogang

If the gray-class level is assigned based on the "gray level", gray class grade vector $U=(u_1, u_2, \cdots u_e)$ can be obtained in order to calculate the value of comprehensive evaluation $V=\sigma \cdot U^T$.

701 Safety measures for ship unloading of South Pars condensate

Qin Haiyang, Liu Tiechuan, Huang Chunfang

Unloading of South Pars condensate should be carried out in intermediate stage to prevent positive pressure from occurring in cabin in unloading process to avoid the leakage of toxic gas.

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节能环保 / 经营管理 / 计量技术 / 经验交流

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703 地源热泵系统在输气站场内的应用及节能分析

张鑫，张旭东，谷英翠，等

与空气源热泵相比，地源热泵系统最大的不同是采用地下低温热资源作为冷热源，故地埋管换热器的设计是其成败的关键

707 中间罐尾气回收装置的运行及其改进措施

劳瑞卿

装置设计负荷 200 m^3/h、总烃排放量小于 25 g/m^3、硫化氢排放量小于 10 mg/m^3，其工艺流程分为废气处理、柴油吸收、碱液排放等

/ 经营管理 /

711 油气管道维抢修队伍应急抢修区域化管理

闫杰，刘寒冰，崔莹莹

将抢修设备分类并集装化管理，事故发生时按照输送介质、管道型号及事故类型装载集装箱，极大地节省了管道抢修设备的装车时间

/ 计量技术 /

714 天然气气质组分变化对超声波流量计的影响

刘明亮，陈福林，吴斌，等

随着气体相对密度的增大，Z_0/Z_n 比值逐渐增大，则超声波流量计输出的标准状态下的流量计量值也随之增大

/ 经验交流 /

716 老油田油气处理站简并重组技术及其应用

耿玉广，刘海俊，宋丽梅，等

低温破乳剂在 38 ℃时，经一次沉降脱水后原油含水率不超过 15%，污水含油不高于 200 mg/L

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/ENERGY SAVING & ENVIRONMENTAL PROTECTION/

703 Application and energy-saving analysis of ground source heat pump system in gas transmission station

Zhang Xin, Zhang Xudong, Gu Yingcui, et al

Compared with air source heat pump, the ground source heat pump system has the biggest difference of taking underground low-temperature heat resource as a cold heat source, so the design of ground heat exchanger is the key to its success.

707 Operation and improvement measures of tail gas recovery device for intermediate tank

Lao Ruiqing

The design load of device is at 200 m^3/h, of total hydrocarbon emissions is less than 25 g/m^3 and hydrogen sulfide emissions is less than 10 mg/m^3. Its technological process is divided into waste gas treatment, diesel oil absorption, alkali liquor emissions, etc..

/MANAGEMENT/

711 Regional management of emergency repair **crew** for emergency repair of oil and gas pipelines

ngying

Classifying and containerized management on **repair** equipments are necessary, and repair devices should be loaded with containers according to the transport medium, pipeline specifications and accident type when an accident occurs, thus significantly reducing the loading time of pipeline repair equipments.

/METERING TECHNOLOGY/

714 Impact of quality components of natural gas on ultrasonic flowmeter

Liu Mingliang, Chen Fulin, Wu Bin, et al

With the increase of the gas relative density, the ratio of Z_0/Z_n is gradually increased and the flow measurement value output by the ultrasonic flowmeter under standard conditions is also increased.

/EXPERIENCE EXCHANGE/

716 Application of restructuring technology in oil and gas processing station in old oilfield

Geng Yuguang, Liu Haijun, Song Limei, et al

If low-temperature demulsifier is used at 38 ℃, crude oil moisture content will not be higher than 15%, sewage oil content not higher than 200 mg/L after the settlement and dehydration are carried out once.

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